

REMARKS

This Response After Final Rejection is in response to the Final Official Action mailed August 27, 2002 and is submitted to put the pending case into condition for allowance thereof or into better condition for appeal. Consideration and entry of this Response are respectfully requested.

Claims 1-24 and 31 remain in the application.

B. 35 U.S.C. § 102(e)

Wong - Claims 1, 2, 5, 8, 15, 18, 20, 23, and 31

Claims 1, 2, 5, 8, 15, 18, 20, 23, and 31 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,083,797 issued July 4, 2000 to Shyh-Chyi Wong and Shi-Tron Lin (hereinafter “the Wong patent”) (Office Action, pages 2-4).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

In the January 17, 2002 Response, the Applicants pointed out that:

In the “Response to Arguments” on page 6, the Office Action, by its own admissions, has rendered the present rejection moot. The Office Action states that “It can be interpreted that though the isolation dielectrics of Wong are considered, ‘high modulus,’ they still will have an effect on the stresses of the silicon substrate, which is what the claims imply.” With the words of “It can be interpreted”, the Section 102(e) rejection fails, because the Office Action has to add something beyond the teaching of the Wong patent. Further, the Office

Action states that the isolation dielectrics “will have an effect on the stresses of the silicon substrate”. This is a mere conjecture, as there is no such teaching within the Wong patent. Thus, in order to make the Wong patent “fit”, the Official Action has to add to the teaching of the Wong patent with its own interpretations and conjectures. The moment that this occurs, the Section 102(e) rejection fails, because “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference”, not in the interpretations and conjectures of the Office.

In response to the Applicants arguments, the current Final Office Action at page 6 (“Response to Arguments”) states the “[t]he STI region (12) of Wong is *inherently* ‘adapted to modify stresses incurred in the active area,’ by the mere placement of the regions in the active area.”

The Office’s inherency contention is insufficient. As set forth in M.P.E.P. § 2112:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of the result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). “To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstance is not sufficient.’” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). “In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art.” *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original).

Unfortunately, the Office has not presented any extrinsic evidence, basis in fact, and/or technical reasoning to support its inherency contention. Therefore, the Final Office Action’s contention is without merit.

With regard to independent claim 1 and independent claim 31, the Office Action at page 2 and at page 4, respectively, contends that the Wong patent teaches that the “isolation structure

substantially surrounds said active area”. The January 17, 2002 Response pointed out that the September 17, 2001 Office Action did not show any teaching in the Wong patent that the isolation structure substantially surrounds the active area. The Final Office Action responded at page 6 stating that “looking at Figure 2D, one skilled in the art will see that the STI region (12) is placed on either side of the active region, as well as in between the N and P channel transistors, thus, surrounding each active region.” This contention is respectfully believed to be inaccurate. At best, the Figure 2D shows is that the STI regions (12) potentially extending a direction perpendicular to the plane of the drawing, not that the STI regions “substantially surround” the active region as defined in the present application (see FIG. 2 of the current application). Thus, as “each and every element” of the claims is not taught by the Wong patent, the rejection to independent claim 1 (and its dependent claims 2, 5, 8, 15, 20, and 23) and independent claim 31 is without merit.

The Final Office Action at page 2 further contends that the limitation in independent claim 1 (from which claim 2, 5, 8, 15, 18, 20, and 23 either directly or indirectly depend) of “wherein at least a portion of said isolation structure is adapted to modify stresses incurred on said active area” is a recitation of the intended use of the claimed invention and does not differentiate the claimed composition of the elements from those known to prior art. Applicants respectfully disagree with this assessment and believe the limitation to be valid. Although M.P.E.P. § 2106 gives “adapted to” as one example of language that may raise a question as to the limiting effect, the Section also sets forth that “[t]he subject matter of a properly construed claim is defined by the terms that limit its scope. It is this subject matter that must be examined. As a general matter, the grammar and intended meaning of terms used in a claim will dictate

whether the language limits to claim scope. Language that suggests or makes optional but does not require step to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation.” The limitation of “adapted to modify stresses incurred on said active area” in claim 1 is not optional. If the isolation structure is not structurally adapted to modify stresses incurred on the active area, then it does not fall within the scope of the present claims. Therefore, the limitation is valid and the Wong patent neither teaches nor suggests an isolation structure that modifies stresses incurred on the active area.

Applicants added independent claim 31 in an Amendment filed June 19, 2001, which claims in total: “A semiconductor device, comprising: an active area formed in a semiconductor substrate; and a stress modifying isolation structure comprising at least one dielectric material disposed within a trench which extends into said semiconductor substrate, wherein said isolation structure substantially surrounds said active area.” Although the claim does not use “adapted to” language, the Office contended that the rejection of “intended use” still applies. However, the limitation of a “stress modifying” isolation structure is no different than a limitation of “metal” in a claim stating “a metal rod”. If a rod shown in a prior art reference is not metal then it cannot be used as in a Section 102 rejection, because the prior art reference must be in “as complete detail as is contained in the claim”. Likewise, the Wong patent does not teach or suggest a “stress modifying” isolation structure, and, thus, it fails as a Section 102(e) rejection.

With regard to claims 5, 15, and 20, the Office Action contends that the Wong patent teaches a trench has a depth in ratio to the active area width is greater than 0.5. However, as pointed out in the January 17, 2002 Response, the Final Office Action does not specifically show any teaching in the Wong patent of such a ratio, nor could the Applicants find any such teaching.

Moreover, not even the drawings show such a ratio between the STI depth and the width of the active area. Surprisingly, the Final Office Action at page 7 admits this and states that “one skilled in the art, through routine experimentation would have been able to compute an aspect ratio in the range claimed in the present invention.” With that admission, the Section 102 rejection fails. The Applicants respectfully find it odd that the Final Office Action does not seem to comprehend the difference between a Section 102 and Section 103 rejection in this regard. Nonetheless, as this limitation is neither taught nor suggested by the Wong patent, the Section 102(e) rejection to these claims is improper.

Thus, it is clear that by the Office Action’s own admission and from the actual teachings of Wong patent that the Section 102(e) is without merit. Therefore, reconsideration and withdrawal of the Section 102(e) rejection of claims 1, 2, 5, 8, 15, 18, 20, 23, and 31 over the Wong patent are respectfully requested.

C. 35 U.S.C. § 103(a)

Wong in view of Lur – Claims 3, 4, 6, 7, 9-14, 16, 17, 19, 21, 22, and 24

Claims 3, 4, 6, 7, 9-14, 16, 17, 19, 21, 22, and 24 stands rejected under 35 U.S.C. § 103(a) as being obvious over the Wong patent in view of U.S. Patent No. 5,395,790 issued March 7, 1995 to Water Lur (hereinafter “the Lur patent”) (Office Action, pages 4-6).

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art

reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As previously discussed for the Section 102(e) rejection, the Wong patent does not teach or suggest that the isolation structure modifies stresses, nor does the Wong patent teach that the isolation structure substantially surrounds the active area, as required for independent claim 1 (from which claims 3, 4, 6, 7, 9-14, 16, 17, 19, 21, 22, and 24 either directly or indirectly depend). The Lur patent is relied upon by the Office Action for a teaching of a low-modulus dielectric material. Thus, the Lur patent does not overcome the deficiencies in the teaching of the Wong patent. Therefore, even if the Wong patent and the Lur patent were properly combined that presently claimed invention would not be taught or suggested.

More specifically, the Office Action relies upon a teaching of a polyimide used as an insulating material in the Lur patent as a teaching of a low-modulus material. However, the term "polyimide" covers a range of polymer compounds that may or may not be low-modulus. Thus, there is no direct teaching of the requirement of the "polyimide" to be low-modulus.

Furthermore, the Lur patent does not overcome the lack of teaching or suggestion within the Wong patent for an isolation structure that modifies stresses. In fact, it is quite the opposite, as the Lur patent teaches that the isolation structure should be "stress-free" (col. 5, line 20).

Moreover, the Lur patent does not overcome the lack of teaching or suggestion within the Wong patent for an isolation structure that substantially surrounds an active area. The Lur patent merely teaches a method of forming an isolation structure.

Additionally, the Office Action at pages 5 and 6 makes the statement that “[t]he dielectric material is disposed in the trench both parallel and perpendicular to the channel current direction”. The Applicants could not find any such teaching or suggestion in either the Wong patent or the Lur patent. The Applicants respectfully request that the Office disclose the location of such a teaching.

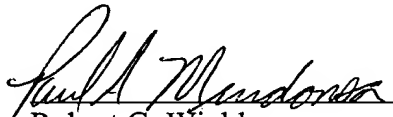
Thus, the Wong patent and the Lur patent, either alone or in combination, do not teach or suggest the presently claimed invention. Therefore, reconsideration and withdrawal of the Section 103(a) rejection of claims 3, 4, 6, 7, 9-14, 16, 17, 19, 21, 22, and 24 over the Wong patent in view of the Lur patent are respectfully requested.

In view of the foregoing remarks, the Applicants request favorable reconsideration and allowance of the application.

Please forward further communications to the address of record. If the Examiner needs to contact the below-signed attorney to further the prosecution of the application, the contact number is (503) 712-1682.

Respectfully submitted,

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For  *REG. No. 42,879*
Robert G. Winkle
Attorney for Applicants
Reg. No. 37,474